



**SHEARWATER
SYSTEMS** LLC
AN OLD HARBOR COMPANY

WTEC
waste to energy canada



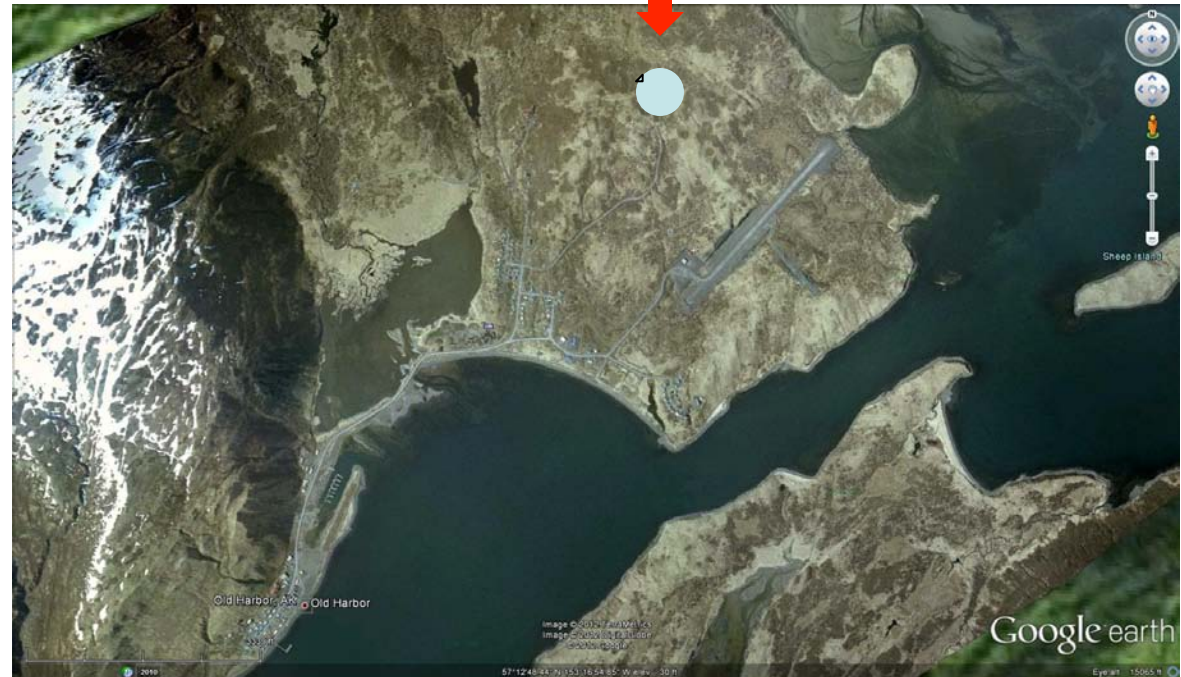
Waste to Energy Solution In Rural and Urban Alaska



Waste Disposal in Remote Alaska Causes Many Concerns

- Location
 - Generally far from town
 - Difficult to get to in adverse conditions
 - Closer to wildlife

Dump





Waste Disposal in Remote Alaska Causes Many Concerns

- Environmental
 - Air Pollutants
 - Water Pollutants
- Health & Safety
 - Exposure
 - Wildlife Interaction
- Economic
 - Damage to Fisheries



Electricity & Fuel Rates are Very High

- Often \$0.30 + Cost of Fuel (an additional \$0.30-\$0.40) per kWh
- Household incomes below \$28,000 can spend 30-50% of their income on heating fuel (diesel) and electricity





An Affordable Solution Exists

- Waste to Energy Canada (WTEC) Mobile Gasification System (MGS)
 - Reduce landfill waste to near zero without harmful emissions or leachate
 - Produce heat, chilled air or electricity
 - Potential to process sewage



What If?...



**SHEARWATER
SYSTEMS** LLC
AN OLD HARBOR COMPANY

WTEC
waste to energy canada

An Affordable Solution Exists



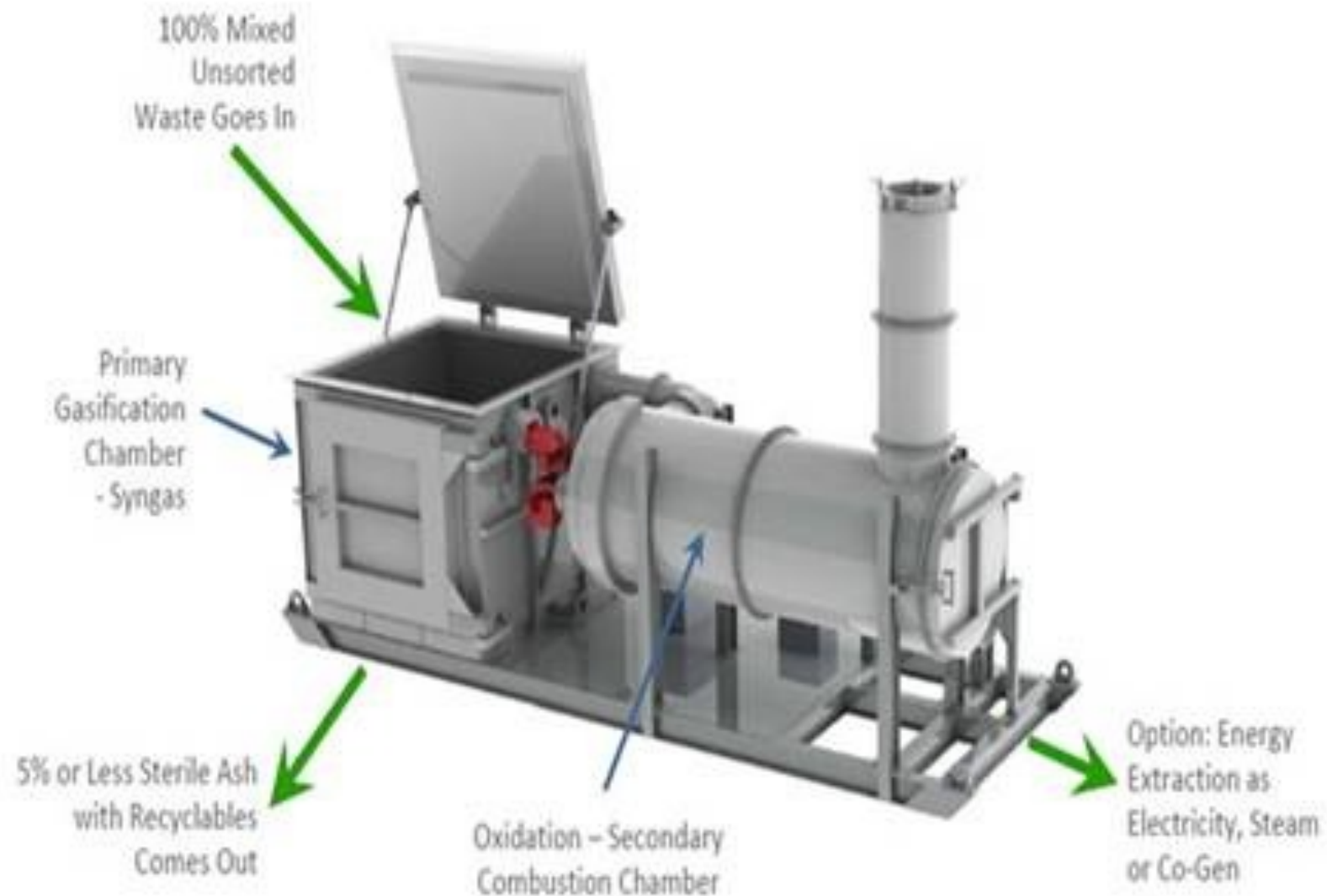
What If?...



**SHEARWATER
SYSTEMS** LLC
AN OLD HARBOR COMPANY

WTEC
waste to energy canada

An Affordable Solution Exists





No Sorting or Pre-Processing

- Cuts capital/operating costs with minimal downtime
- The small MGS processes 1.5 tons/day per module
- 2-4 person/hours/day





Accepted Solid Waste Streams

- Residential
- Tires
- Commercial
- HazMat
- Biomass
- Pharmaceutical
- Medical
- Industrial
- Used Oils
- Dewatered Bio-sludge





Accepted Liquid Waste Streams

- Used oil, oil sludge
- Oil and latex paints
- Organic solvents
- Anti-freeze
- Transformer fluid
- Organic refrigerants
- Persistent Organic Pollutants (POPs) – pesticides & herbicides



Transformer fluid



What's Left

- Sterile
- Non-toxic
- Virtually no carbon
- No slag or clinkers
- Land-filling not required
- Easily separated from glass and metals for recycling
- Passes EPA's "Toxicity Characteristics Leaching Procedure" (TCLP) test
- Bottom ash can be sold as aggregate for concrete or for asphalt road surfacing.





What's it cost?

- Each system is customized specifically for the client's waste stream, energy and wastewater needs and prices can and **WILL** vary
- However... **Ballpark Estimate Only**
 - Capital cost for a 1.5 ton/day unit \$1.5 - \$2 million installed
 - Electric Production add-on for units 4 ton/day or higher start at ~ \$350,000
- Price includes engineering, set-up and training
- Shipping price not included due to high variability



Value

- Heating and/or Electricity Value =
 - \$100,000-\$200,000 per year (assuming 4 ton/day)
 - Could offset heating for school and tribal office
- Waste Solution – eliminates landfill growth and adds the potential to mine current landfill
 - Pollution – eliminates leachate and air pollution
 - Improves Health & Safety
 - Positive impact on wildlife streams and reduces negative human/wildlife interactions
 - Tourism – aesthetic improvements in the community



Value

- Economic Return on Investment
 - ~ 10 years - depending
- Social Return on Investment
 - Immediate
- Environmental Return on Investment
 - Immediate



Real World Example



Old Crow, Yukon Territory, Canada

- Arctic Circle Community
- Pristine Wilderness, Porcupine River
- 1st Nation (Vuntut Gwitchin), Territorial & Government funded
- Clean up severe landfill problem (leachate, runoff, air pollution)





Old Crow, Yukon Territory



**SHEARWATER
SYSTEMS** LLC
AN OLD HARBOR COMPANY

WTEC
waste to energy canada











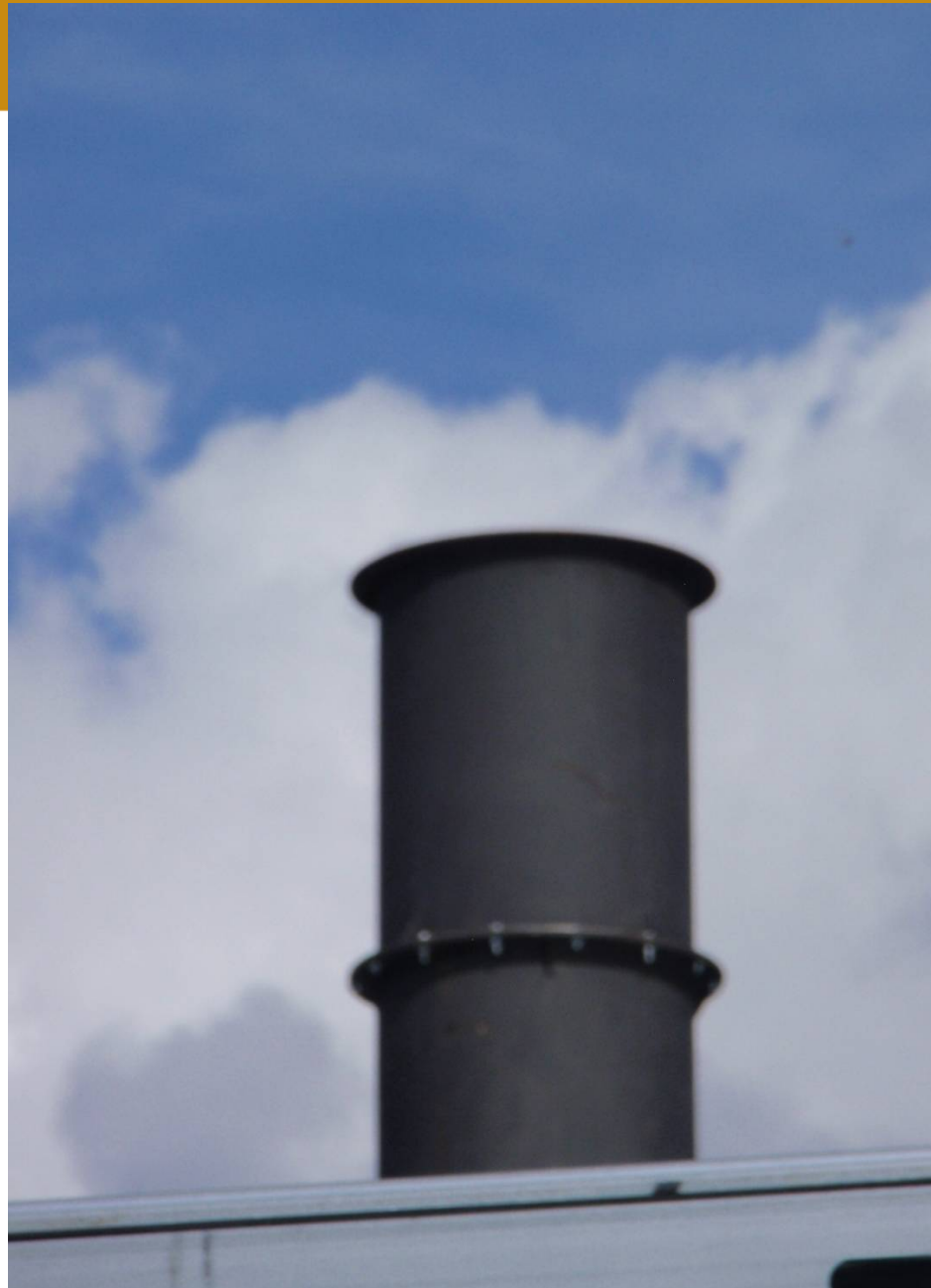














Old Crow, Yukon Territory



**SHEARWATER
SYSTEMS** LLC
AN OLD HARBOR COMPANY

WTEC
waste to energy canada









Old Crow, Yukon Territory



**SHEARWATER
SYSTEMS** LLC
AN OLD HARBOR COMPANY

WTEC
waste to energy canada





- Contact Information

Andy Dickerson
Project Manager
Shearwater Systems
An Old Harbor Company
(513) 207-0700 cell